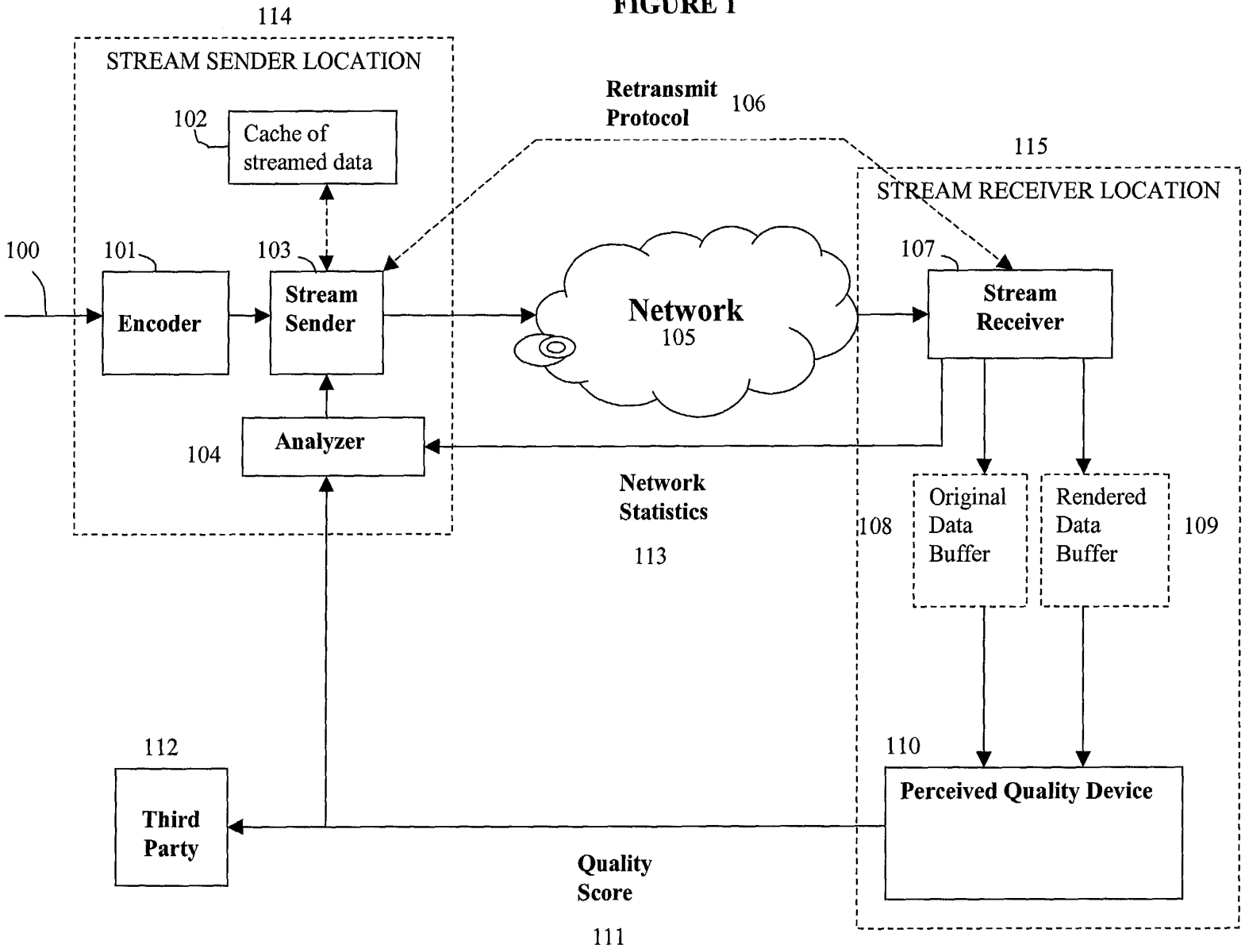
FIGURE 1


114
STREAM SENDER LOCATION
102
Cache of streamed data
Retransmit Protocol
106
115
STREAM RECEIVER LOCATION
100
101
Encoder
103
Stream Sender
Network
105
107
Stream Receiver
104
Analyzer
Network Statistics
113
108
Original Data Buffer
Rendered Data Buffer
109
112
Third Party
110
Perceived Quality Device
Quality Score
111

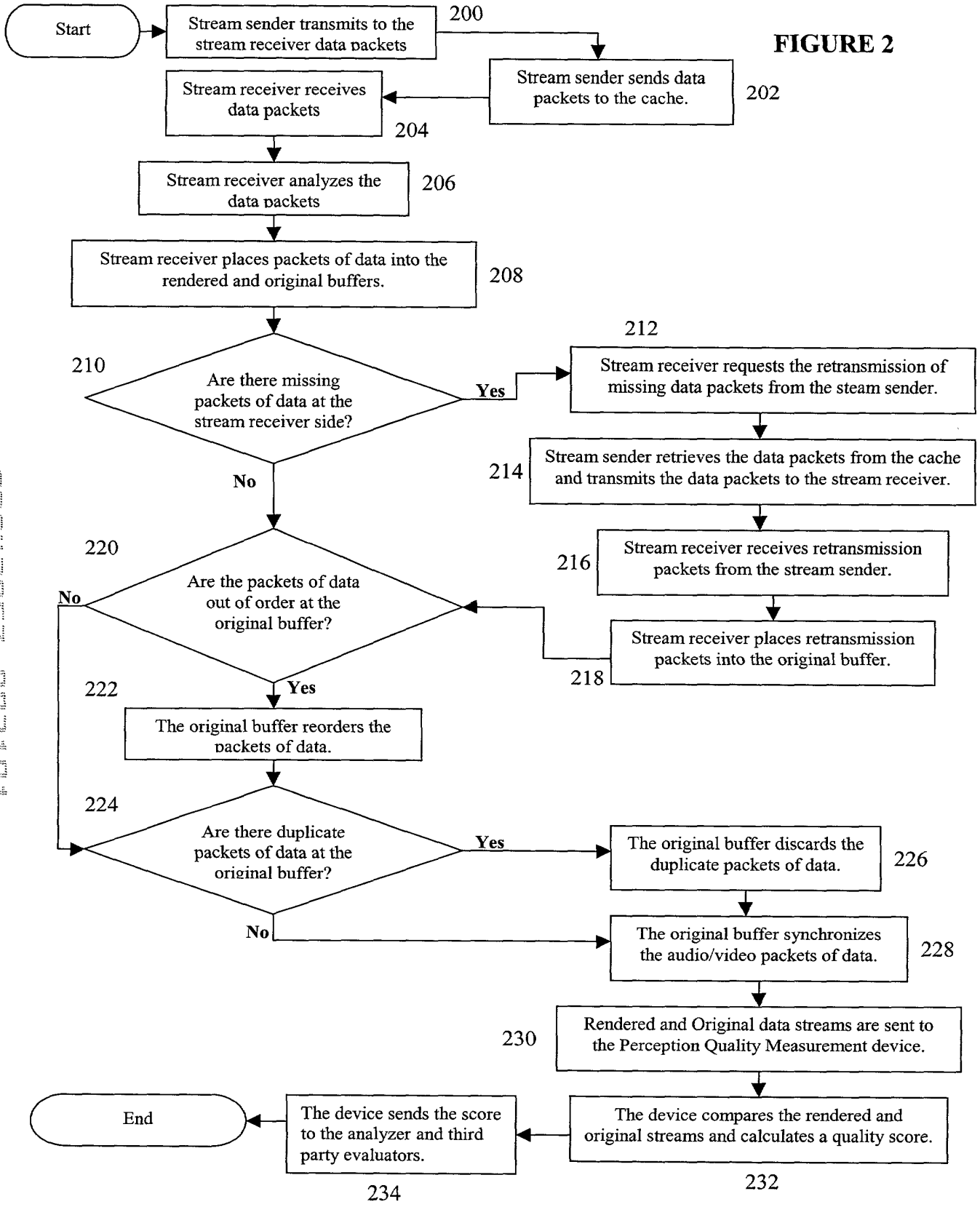

Start
Stream sender transmits to the stream receiver data packets
200
Stream sender sends data packets to the cache.
202
Stream receiver receives data packets
204
Stream receiver analyzes the data packets
206
Stream receiver places packets of data into the rendered and original buffers.
208
210
Are there missing packets of data at the stream receiver side?
Yes
212
Stream receiver requests the retransmission of missing data packets from the steam sender.
214
Stream sender retrieves the data packets from the cache and transmits the data packets to the stream receiver.
216
Stream receiver receives retransmission packets from the stream sender.
218
Stream receiver places retransmission packets into the original buffer.
No
220
Are the packets of data out of order at the original buffer?
No
Yes
222
The original buffer reorders the packets of data.
224
Are there duplicate packets of data at the original buffer?
Yes
The original buffer discards the duplicate packets of data.
226
No
The original buffer synchronizes the audio/video packets of data.
228
230
Rendered and Original data streams are sent to the Perception Quality Measurement device.
The device compares the rendered and original streams and calculates a quality score.
232
The device sends the score to the analyzer and third party evaluators.
234
End

FIGURE 2

FIGURE 3

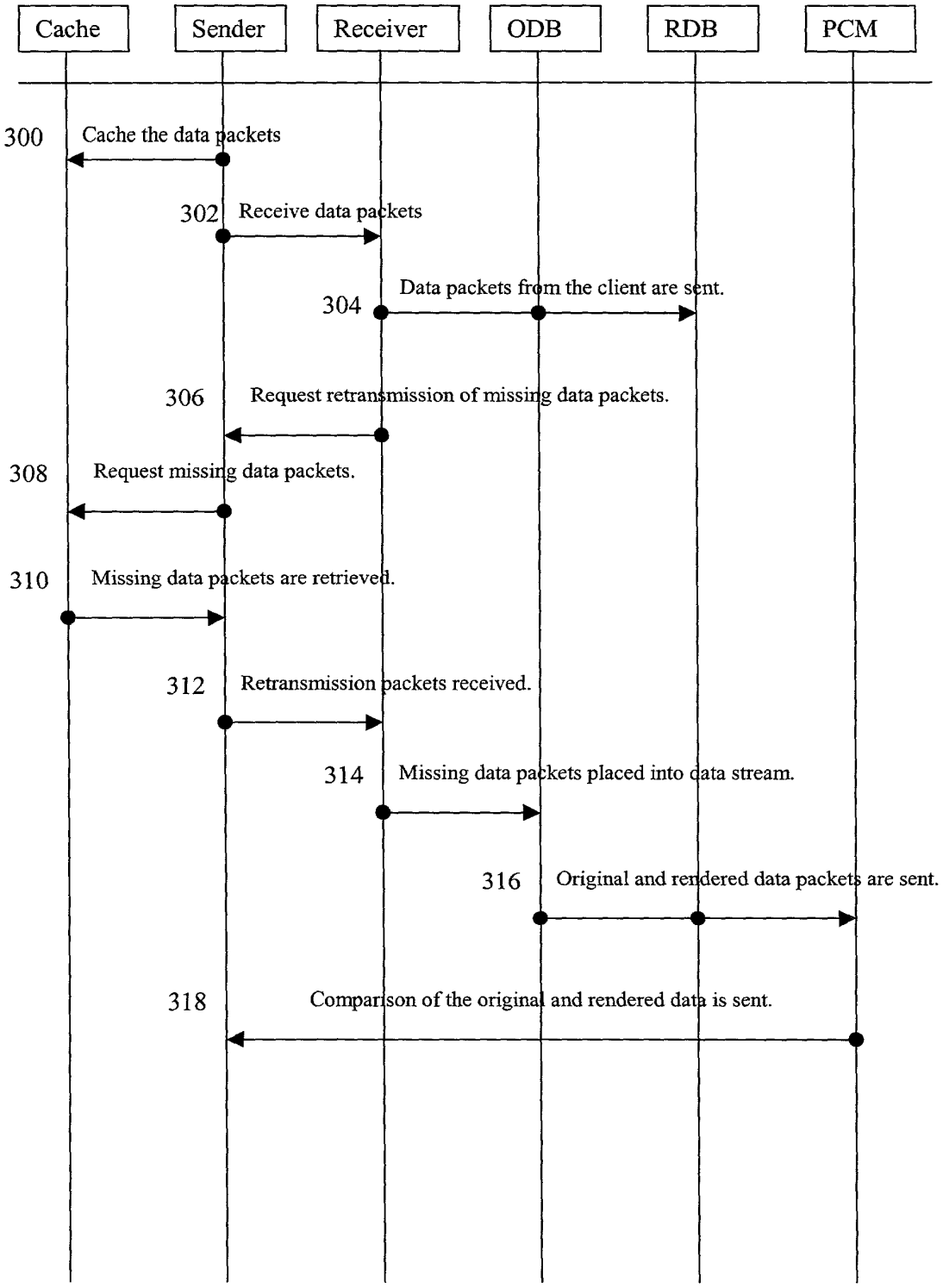

Cache
Sender
Receiver
ODB
RDB
PCM
300
Cache the data packets
302
Receive data packets
304
Data packets from the client are sent.
306
Request retransmission of missing data packets.
308
Request missing data packets.
310
Missing data packets are retrieved.
312
Retransmission packets received.
314
Missing data packets placed into data stream.
316
Original and rendered data packets are sent.
318
Comparison of the original and rendered data is sent.

FIGURE 4

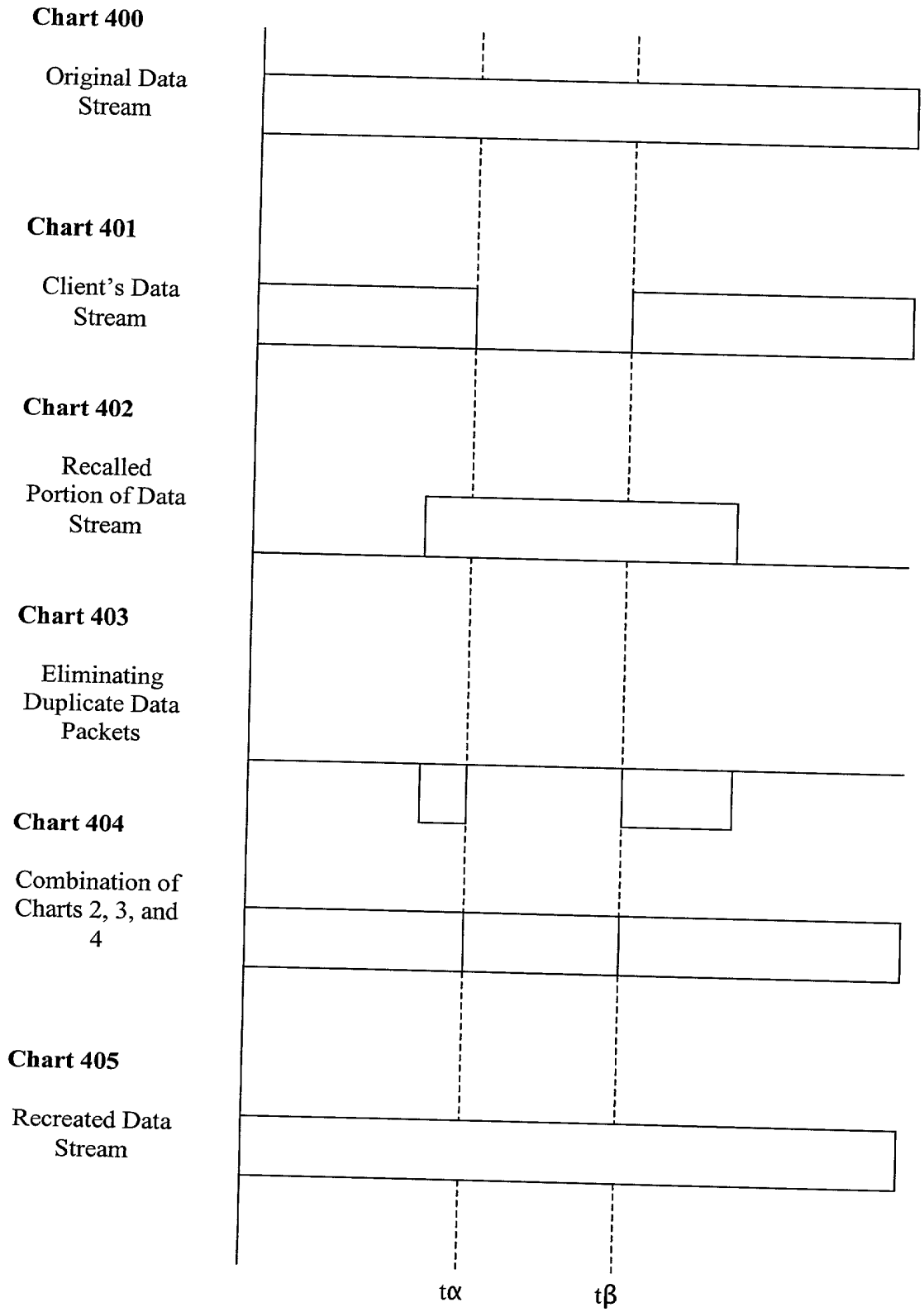


Chart 400
Original Data Stream
Chart 401
Client's Data Stream
Chart 402
Recalled Portion of Data Stream
Chart 403
Eliminating Duplicate Data Packets
Chart 404
Combination of Charts 2, 3, and 4
Chart 405
Recreated Data Stream
tα
tβ